A.D. 1869. Aug. 2. N° 2314.
SHARROCKS' SPECIFICATION.

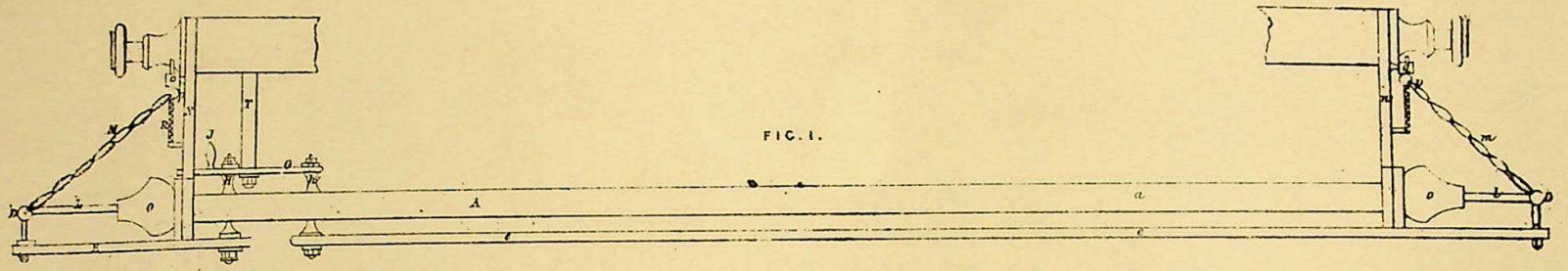

FIG. 1.

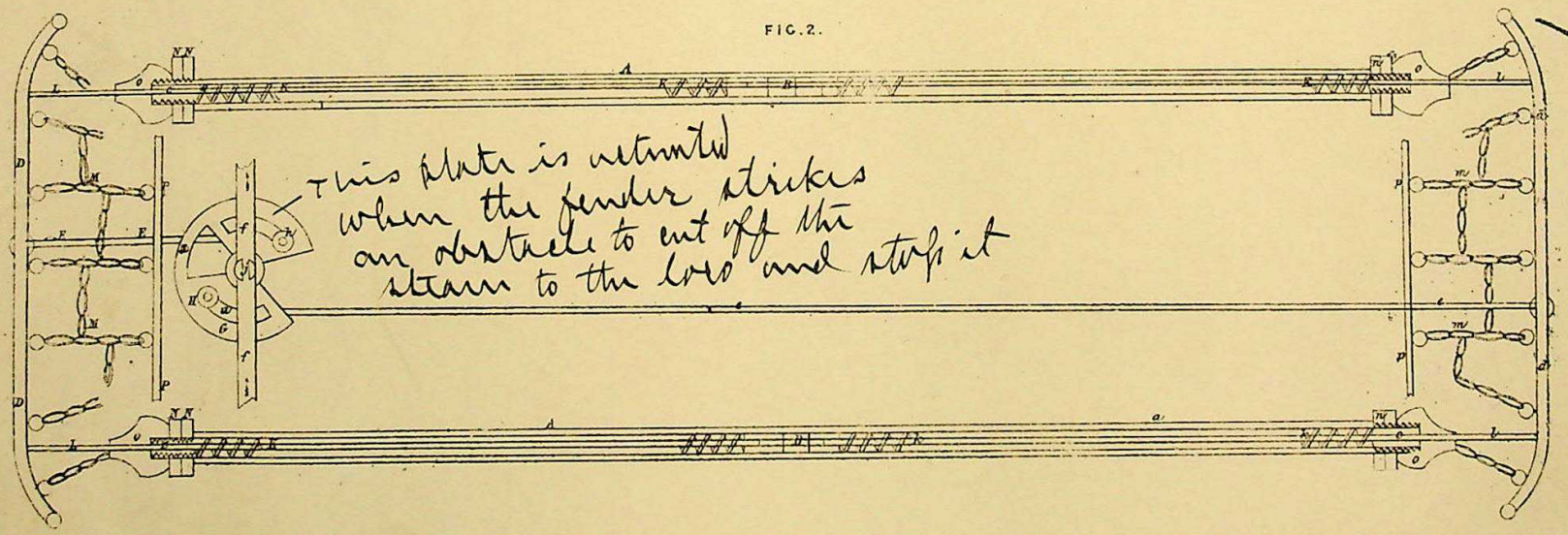

FIG. 2.

This plate is actuated when the fender strikes an obstacle to cut off the steam to the bars and stop it

293/2
ENGLISH
8/1869
2314 A 1869

A.D. 1869, *2nd August.* N° 2314.

Locomotive Engines.

LETTERS PATENT to James Sharrocks, of Red Brook Mill, Bury Road, Rochdale, in the County of Lancaster, for the Invention of "IMPROVEMENTS APPLICABLE TO LOCOMOTIVE ENGINES FOR THE PURPOSE OF REMOVING OBSTRUCTIONS ON RAILWAYS."

Sealed the 1st February 1870, and dated the 2nd August 1869.

PROVISIONAL SPECIFICATION left by the said James Sharrocks at the Office of the Commissioners of Patents, with his Petition, on the 2nd August 1869.

I, JAMES SHARROCKS, of Red Brook Mill, Bury Road, Rochdale, in the County of Lancaster, do hereby declare the nature of the said Invention for "IMPROVEMENTS APPLICABLE TO LOCOMOTIVE ENGINES FOR THE PURPOSE OF REMOVING OBSTRUCTIONS ON RAILWAYS," to be as follows:—

This Invention relates to certain improvements applicable to locomotive engines, the object being to remove impediments or obstructions on or between the lines of rails, and in cases where a human being is the

obstruction and the engine is progressing slowly to remove the same without the necessity of material injury, and even when the engine may be travelling at considerable speed without mangling or destroying it, as is at present the result of such removal. To accomplish these ends I propose to apply to the front or rear or to both ends of the locomotive an apron formed of chain work connected at top and bottom by iron or brass or other metal rods to two piston rods working horizontally on each side of the engine and placed within two tubes extending along the entire length of the engine, and under and close alongside the inner side of the wheel; these tubes being provided midway with bosses or sockets partly bored through to receive the extremities of the rods, and to permit of their play to and fro as required. These tubes are fixed by brackets to the engine beams, and guides for the rods are applied to each end of the brackets as also slides for the top cross rods. To the cross rods horizontal rods are connected in connection with a circular slotted plate underneath the engine and in gear with the steam pipe which supplies the cylinders on each side of the engine, such plate forming a valve on which are fitted two studs attached to two rods, one running to and fixed to the bottom bar or rod on the chain apron, and the other extending from the opposite end of the engine to the corresponding side or periphery of the circular valve above which the steam pipe conveys the steam to the cylinders. Studs are fixed to the horizontal rods which actuate the circular cut off valve, and a handle is applied thereto for the purpose of adjusting the same, which is controlled by a spindle. The top bars work on vertical slides, on which helical springs are placed to ease the weight and cause their return to their normal position when the weight removed from the rails is discharged. The arrangement of the circular slotted plate valve compels the engine driver to leave his engine and re-adjust it, after it has been shut off by an obstruction on the rails, and before he can start again. Within the tubes containing the piston rods helical springs are also applied, surrounding the rods and acting against the fixed bosses and the sliding bosses at their front and rear. These appliances might in many cases be affixed to the guard's van, so as to be available during the process of shunting.

The operation of this Invention is as follows:—When any obstruction touches the bottom bar of the chain apron, which should be placed from one to two inches or thereabouts above the level of the surface of the

rails, it will cause the helical springs inside the tubes to be compressed, so that by the yielding of the apron the obstruction would be caught up by the chain apron, which would then be thrown outwards or forwards (and thus form a sort of concavity) by the descent of the top bar against the action of the springs on the vertical slides. The obstruction would thus be permitted a resting place until the engine should be stopped, which would be the case immediately if the progress were slow, as one of the horizontal rods would at once act on the circular valve and shut off the steam, and if going at a great or ordinary speed it would also stop in a reasonable time, as the steam would be shut off immediately the obstruction struck the bottom bar or rod of the chain apron, and thus give immediate notice thereof to the driver or guard. The studs an rods on the circular wheel would not allow the steam to be turned on until regulated by the handle on the circular valve.

By these improvements the wheels of the engine will not come in contact with the impediments or obstructions on the rails, but the protecting chain apron will receive them, thus preventing the engine from running off the rails and avoiding destruction to the impediment, which is chiefly of importance where human life is concerned.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said James Sharrocks in the Great Seal Patent Office on the 2nd February 1870.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, James Sharrocks, of Red Brook Mill, Bury Road, Rochdale, in the County of Lancaster, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Second day of August, in the year of our Lord One thousand eight hundred and sixty-nine, in the thirty-third year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said James Sharrocks, Her special licence that I, the said James Sharrocks, my executors, administrators, and assigns, or such others as I, the said James Sharrocks, my executors, administrators, and assigns, should at any time agree with, and no others,

from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS APPLICABLE TO LOCOMOTIVE ENGINES FOR THE PURPOSE OF REMOVING OBSTRUCTIONS ON RAILWAYS," upon the condition (amongst others) that I, the said James Sharrocks, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said James Sharrocks, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My Invention relates to certain improvements applicable to locomotive engines, the object being to remove impediments or obstructions on or between the lines of rails, and in cases where a human being is the obstruction and the engine is progressing slowly to remove the same without the necessity of material injury, and even when the engine may be travelling at considerable speed without mangling or destroying it as is at present the result of such removal. To accomplish these ends I propose to apply to the front or rear or to both ends of the locomotive an apron or bag formed of chain work, connected at top and bottom by iron or brass or other metal rods to two piston rods working horizontally on each side of the engine and placed within two tubes extending along the entire length of the engine, and under and close alongside the inner side of the wheel; these tubes being provided midway with bosses or sockets partly bored through to receive the extremities of the rods, and to permit of their play to and fro as required. These tubes are fixed by brackets to the engine beams, and guides for the rods are applied to each end of the brackets, as also slides for the top cross rods. To the bottom cross rods horizontal rods are connected in connection with a circular slotted plate underneath the engine, and in gear with a valve in the steam pipe which supplies the cylinders on each side of the engine, such plate working the said valve

on which are fitted two studs attached to the two rods, one running to and fixed to the bottom bar or rod on the chain apron or bag, and the other extending from the opposite end of the engine to the corresponding side or periphery of the circular slot in the valve plate, thus whichever end of the engine is in front the bottom bar of the chain apron or bag communicates its motion to the rods and actuates the circular valve in the steam pipe which conveys the steam to the cylinders. Studs are fixed to the horizontal rods which actuate the circular cut-off valve, and a handle is applied to the plate for the purpose of adjusting the same, which is controlled by a spindle. The top bars work on vertical slides, on which helical springs are placed to ease the weight and cause their return to their normal position when the weight removed from the rails is discharged. The arrangement of the circular slotted plate valve compels the engine driver to leave his engine and readjust it after it has been shut off by an obstruction on the rails, and before he can start again. Within the tubes containing the piston rods helical springs are also applied surrounding the rods and acting against the fixed bosses and the sliding bosses at their front and rear. These appliances might in many cases be affixed to the guard's van so as to be available during the process of shunting.

The operation of this Invention is as follows:—When any obstruction touches the bottom bar of the chain apron, which should be placed from one to two inches or thereabouts above the level of the surface of the rails and one to two inches or thereabouts between and below the level of the rails, it will cause the helical springs inside the tubes to be compressed, so that by the yielding of the apron the obstruction would be caught up by the chain apron, which would then be thrown outwards or forwards (and thus form a sort of concavity) by the descent of the top bar against the action of the springs on the vertical slides. The obstruction would thus be permitted a resting place until the engine should be stopped, which would be the case immediately if the progress were slow, as one of the horizontal rods would at once act on the circular valve and shut off the steam, and if going at a great or ordinary speed it would also stop in a reasonable time, as the steam would be shut off immediately the obstruction struck the bottom bar or rod of the chain apron, and thus give immediate notice thereof to the driver or guard. The studs and rods on the circular wheel would not

allow the steam to be turned on until regulated by the handle on the circular valve.

By these improvements the wheels of the engine will not come in contact with the impediments or obstructions on the rails, but the projecting chain apron will receive them or throw them off the rails, thus preventing the engine from running off the rails, and avoiding destruction to the impediment, which is chiefly of importance where human life is concerned.

In order that my said Invention may be more completely understood, I annex the accompanying Drawings, in which Fig. 1 is a side elevation, and Fig 2 a plan view; similar letters denoting corresponding parts.

A, A, *a*, *a*, are two tubes extending from end to end of the engine; B, B, two bosses bored part way through for guides for the rods L, L, *l*, *l*; C, C, *c*, *c*, sliding bosses for the tubes A, A, *a*, *a*; D, D, *d*, *d*, front and rear cross rods; E, E, *e*, *e*, rods for working the circular plate G; *f*, *f*, steam pipe communicating with the cylinders; G, G, circular plate attached to the steam valve J; H, *h*, studs attached to the rods E, *e*, and the plate G; J, plug valve between the pipes *f*, *f*; J, handle for adjusting the valve I; K, K, *k*, *k*, spiral springs in the tubes A, A, *a*, *a*; L, L, *l*, *l*, rods sliding in the tubes A, A, *a*, *a*; M, *m*, chain aprons or bags fixed to the cross rods D, *d*, and P, *p*; N, N, *n*, *n*, brackets to fix the tubes to the engine beams; O, O, *o*, *o*, guides for the rods L, L, *l*, *l*; P, *p*, top cross rails to which the chain bags or aprons M, *m*, are fixed; Q, *q*, brackets for the slides R, *r*; R, *r*, slides for the top cross rails P, *p*; S, *s*, spiral springs on the slides R, *r*; T, valve spindle; U, *u*, slots in the circular plate G.

Having now described the nature of my said Invention, and the manner in which the same is to be performed, I would remark that I do not limit myself to the exact details and configuration of parts which I have expressed and shewn, as the same may obviously be varied or modified by other equivalents without in any degree departing from the objects required; but what I claim and desire to be secured to me by the herein in part recited Letters Patent is, the general construction and arrangement of parts in combination constituting my improvements applicable to locomotive engines for the purpose of removing obstructions on railways, more especially during the operation of shunting, or

near stations where the speed is slow, and whereby life may be saved, or the mangling or cutting of a human body be prevented, and the engine stopped, substantially in the manner herein specified.

In witness whereof, I, the said James Sharrocks, have hereunto set my hand and seal, this Twenty-sixth day of January, in the year of our Lord One thousand eight hundred and seventy.

JAMES SHARROCKS. (L.S.)

Witness,
WILLIAM GRANDIDGE,
Hudson Street,
Rochdale.

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1870.